

The claimed invention is:

Simultaneous demodulation of Endpoint Signals

1. A system for receiving and processing signals received from a plurality of endpoints,
each endpoint including an endpoint transmitter in electrical communication with a power
5 distribution lines within a power distribution system, the system comprising:

a power line coupler;

a substation receiver in electrical communication with the power line coupler; and

a substation circuit in electrical communication with the substation transceiver, the

substation circuit configured to simultaneously demodulate signals received

10 from the plurality of different endpoints.

2. The system of claim 1 wherein the substation circuit is programmed to demodulate
signals using frequency shift keying.

3. The system of claim 2 wherein the substation circuit is programmed to demodulate
signals within the range of about 970 Hz to about 1006 Hz.

15 4. The system of claim 3 wherein each signal has a bandwidth of about 10 mHz or less.

5. The system of claim 4 wherein each signal has a bandwidth of 4 mHz.

6. The system of claim 2 wherein the substation circuit is programmed to simultaneously
demodulate up to 9000 signals, each signal being from a different endpoint transceiver.

7. The system of claim 1 wherein the substation circuit includes a digital signal processor
20 programmed to simultaneously demodulate the signal received from the endpoint
transmitters.

8. The system of claim 1 wherein the substation transceiver simultaneously receives
signals from a plurality of the endpoint transceivers.

9. The system of claim 1 wherein the power line coupler is in electrical communication with a power distribution line within a power distribution system, the system further comprising one or more endpoints in electrical communication within the power distribution system, each endpoint including:

- 5 an endpoint circuit configured to generate data; and
- an endpoint transmitter in electrical communication with the endpoint circuit and a power distribution line within the power distribution system, the endpoint transceiver configured to generate a signal embodying the signal, to modulate the data using frequency shift keying, and to transmit the
- 10 modulated signal onto the power distribution line.

10. The system of claim 9 wherein:

 the endpoint circuit includes an automated meter reading device, the automated meter reading device being interfaced with an electrical meter; and

 the data includes a quantity of electrical power measured by the electrical meter.

- 15 11. The system of claim 9 wherein each endpoint further comprises an endpoint transceiver, the endpoint transmitter integrally formed in the endpoint transceiver.

12. The system of claim 1 further comprising a substation transceiver, the substation receiver integrally formed in the substation transceiver.

13. A method of processing signals received from a plurality of endpoints over power
- 20 distribution lines, the method comprising:

 obtaining a plurality of signals from a power distribution line, each signal corresponding to a different frequency bandwidth; and

 simultaneously demodulating the plurality signals.

14. The method of claim 13 wherein simultaneously demodulating the plurality signals includes demodulating each of the signals using frequency shift keying.
15. The method of claim 14 further comprising simultaneously receiving signals from each of the endpoints.
- 5 16. The method of claim 15 wherein obtaining a plurality of signals from a power distribution line includes obtaining a plurality of signals within a frequency range from about 970 Hz to about 1006 Hz.
17. The method of claim 15 wherein obtaining a plurality of signals from a power distribution line includes obtaining a plurality of signals, each of the plurality of signals
- 10 having a bandwidth of about 10 mHz or less.
18. The method of claim 17 wherein obtaining a plurality of signals from a power distribution line includes obtaining a plurality of signals, each of the plurality of signals having a bandwidth of about 4 mHz.
19. The method of claim 13 wherein obtaining a plurality of signals from a power
- 15 distribution line includes obtaining up to 9000 signals.